The Federation of Earth Science Information Partners

Fostering connections to make data matter

ESIP 101

An Introduction to All Things ESIP

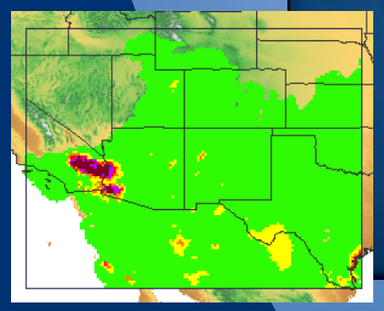
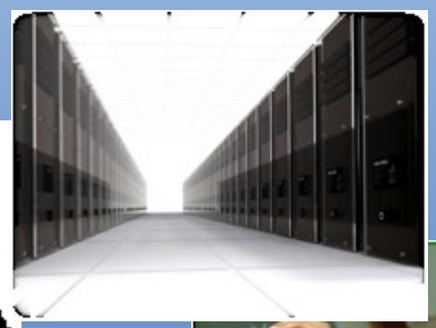
http://esipfed.org

September 16, 2013

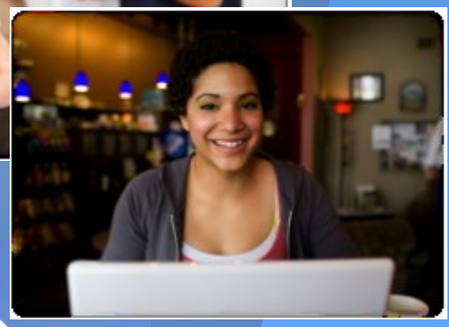
ESIP Vision

To be a leader in promoting the collection, stewardship and use of Earth science data, information and knowledge that are responsive to societal needs.

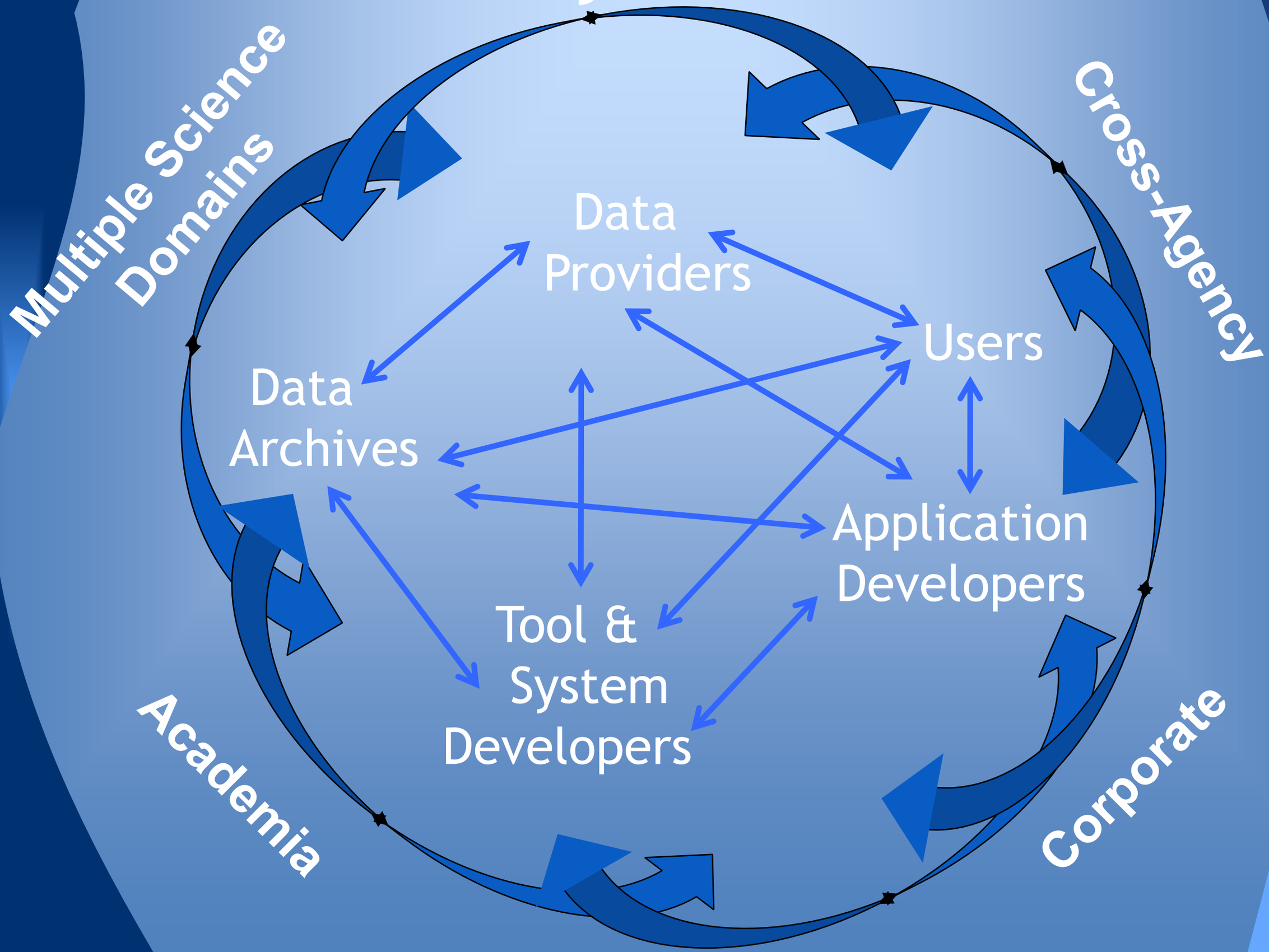







ESIP Community



ESIP Core Values

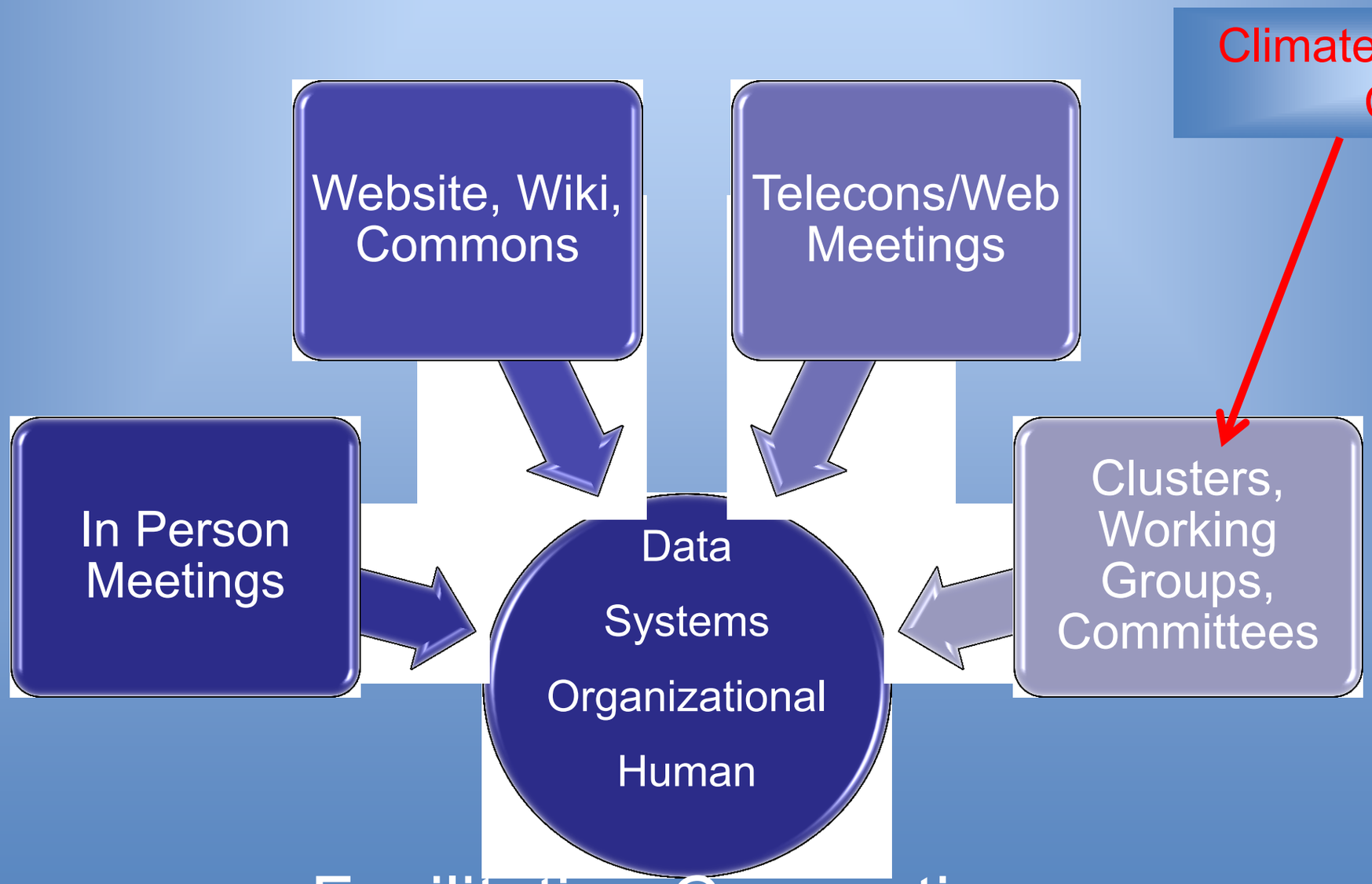
- Agility
- Collaborative
- Collegial
- Community-driven
- Innovative
- Neutral
- Open
- Participatory
- Voluntary

Two Organizations: ESIP Federation & Foundation for Earth Science

ESIP Federation is *the community*.

Foundation for Earth Science provides *management, operational and logistical services* to the ESIP Federation.

Foundation Coordination for ESIP



Facilitating Connections

Governance

- Assembly
  - 1 partner, 1 vote
  - Annual meeting in Jan.
  - Leadership elected from Assembly representatives
- Committee
  - Chair elected by Assembly
  - Chair serves on Executive Committee
- Working group
  - Created by Assembly or Committee
  - Task-oriented
- Cluster
  - Self-forming
  - For any reason
  - Ends when the last person hangs up

ESIP Groups

- Standing Committees
  - Data Stewardship
  - Education
  - Information Technology and Interoperability
  - Products and Services
- Administrative Committees
  - Constitution and Bylaws
  - Finance and Appropriations
  - Partnership
- Working groups
  - Air Quality
  - Climate Education
  - Energy & Climate
  - Visioneers
- Clusters
  - Climate & Ag
  - Cloud Computing
  - Decisions
  - Discovery
  - Documentation
  - Drupal
  - Earth Science Collaboratory
  - Geospatial
  - Open Source
  - Semantic Web
  - Software
  - Student Fellows
  - And Yours?

ESIP Leadership

ESIP
The Federation of Earth Science Information Partners
Fostering connections to make data matter

Karl Benedict & Donald

Annette Schloss

President & Vice President

Brian Wee

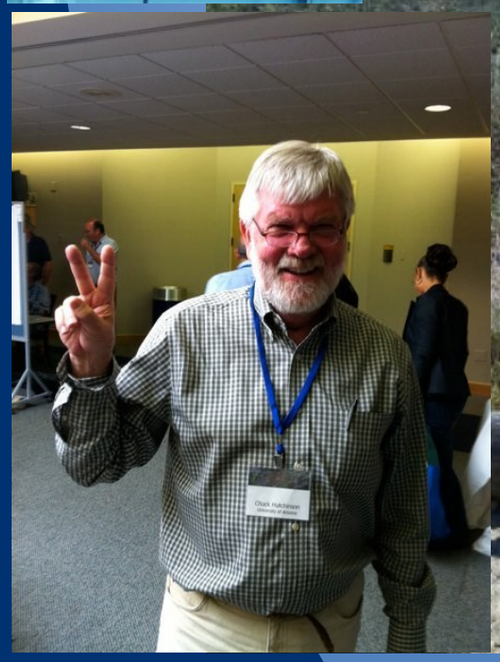
Stefan Falke

Emily Law

ESIP Type Reps

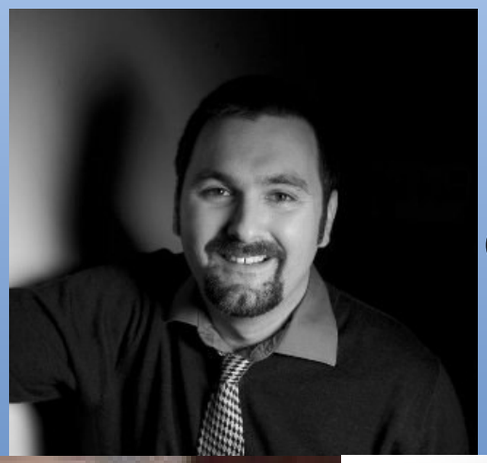
Tamara Ledley

Administrative Committee Chairs



Chuck

John Scialdone

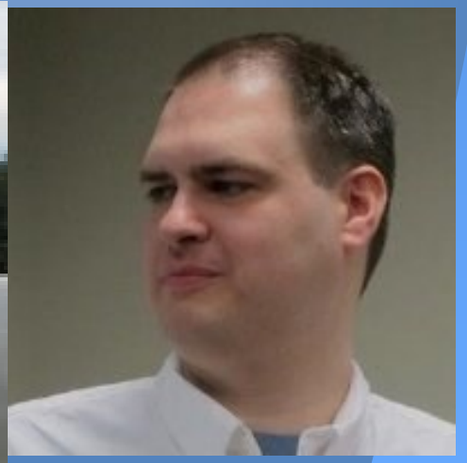


Chris Mattmann

Standing Committee Chairs

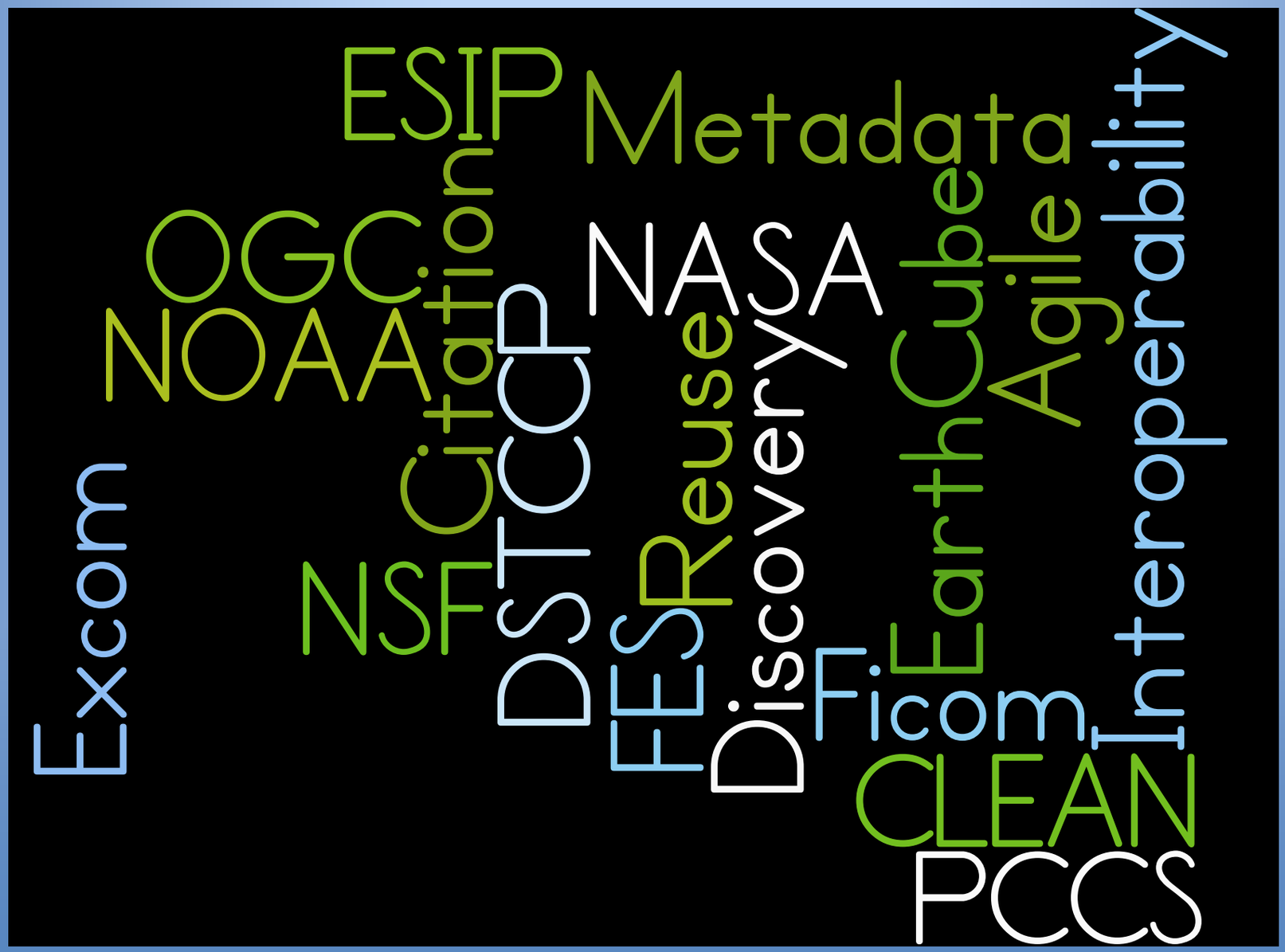
Roberta Johnson

Matt Austin



Curt Tilmes

ESIP-Speak – Alphabet Soup



Things ESIP Does

- Community-generated Best Practices (e.g. Citation)
- Testbed (e.g. Identifiers, Ontology)
- Community Conventions (e.g. Discovery)
- Professional Development
  - Technical Workshops
  - Non-technical Workshops (e.g. Evaluation, Communication)
  - Data Management Short Course/Workshops
- Outreach
  - Education (e.g. annual teacher workshop on climate change)
  - Professional Societies (e.g. AGU, GSA)
  - International Efforts (e.g. GEO, ISRSE)
- Provide Venue for Collaboration and Connections
  - Both virtual and in-person
  - Support with suite of collaboration tools
- Provide mini-grants to make stuff happen

ESIP Online

- Home page
  - http://esipfed.org
- Wiki
  - http://wiki.esipfed.org
- Commons
  - http://commons.esipfed.org
- Facebook
  - http://tinyurl.com/esip-facebook
- Twitter
  - #esipfed

Questions

Karl Benedict, kbene@edac.unm.edu
Carol Meyer, carolbmeyer@esipfed.org

Examples of Collaborative Projects between ESIP Members and USDA

- FAS
- WAOB

USDA FAS Crop Explorer & NASA TMPA (Precipitation)

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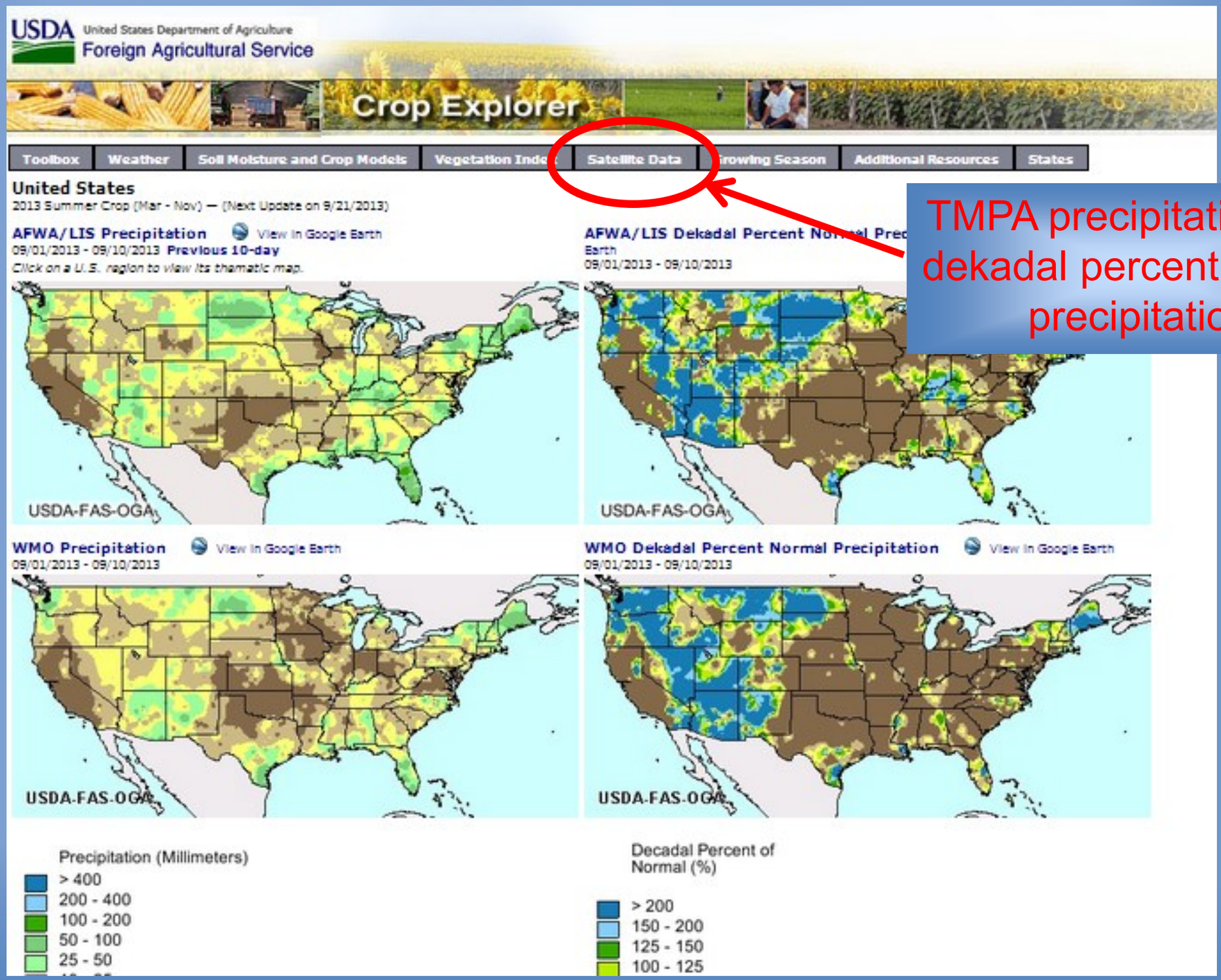


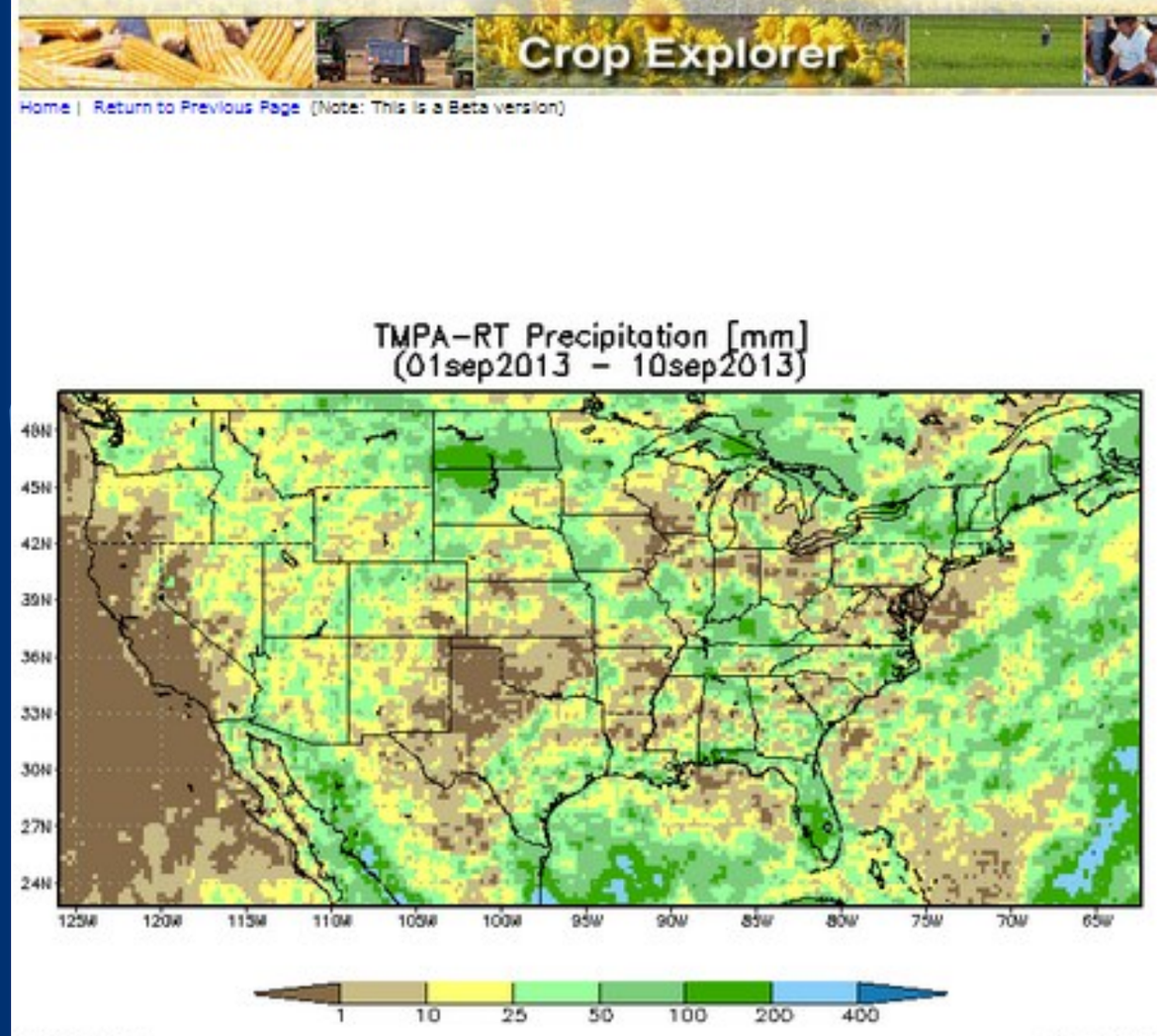
TMPA precipitation and dekadal percent normal precipitation

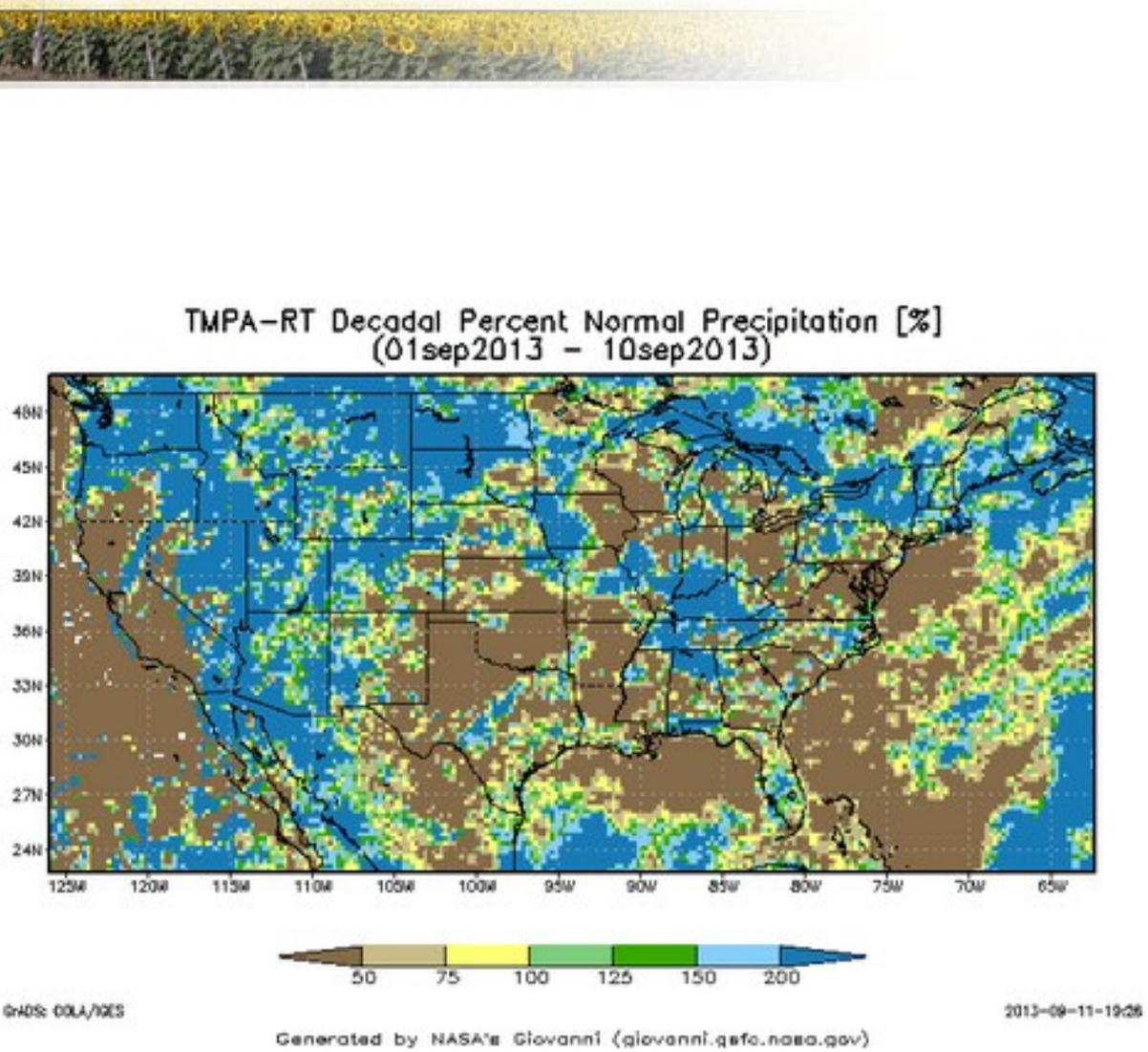
USDA FAS Crop Explorer & NASA TMPA (Precipitation)

USDA United States Department of Agriculture
Foreign Agricultural Service

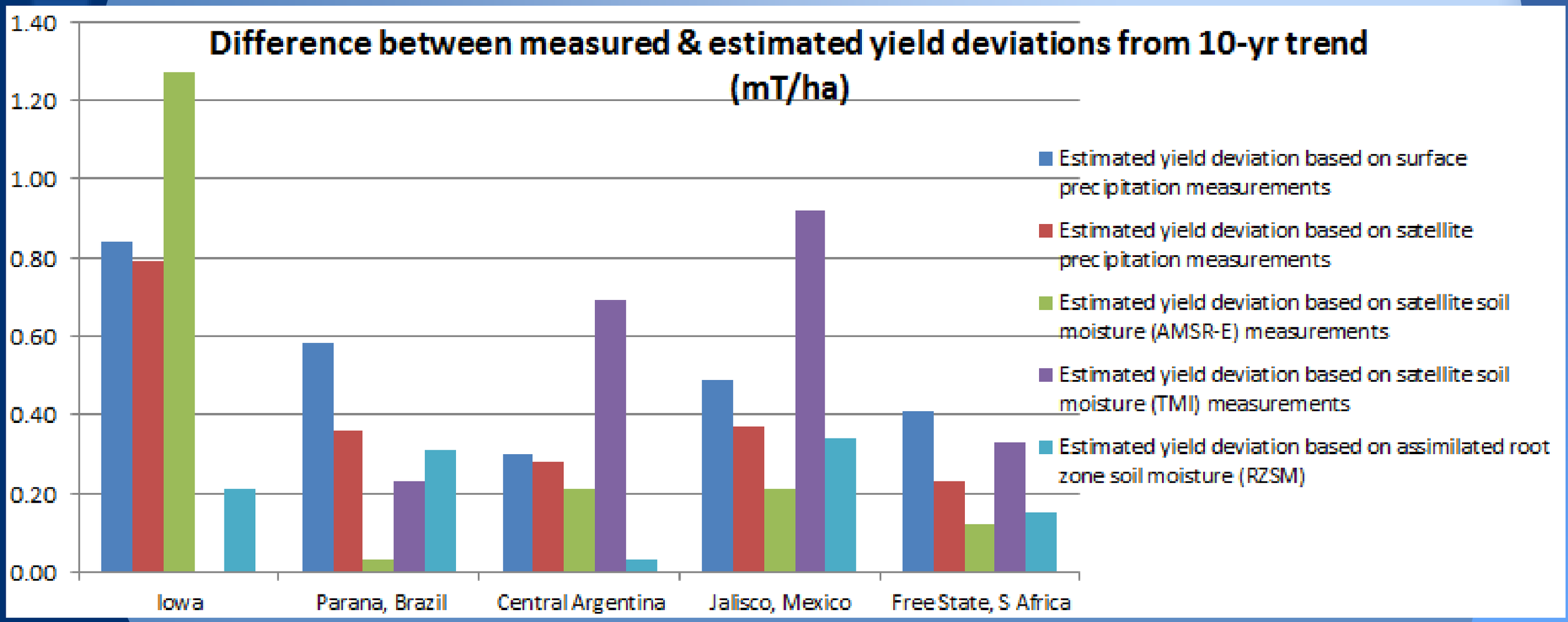
Crop Explorer

Home | Return to Previous Page (Note: This is a Beta version)





USDA WAOB & NASA Satellite Data

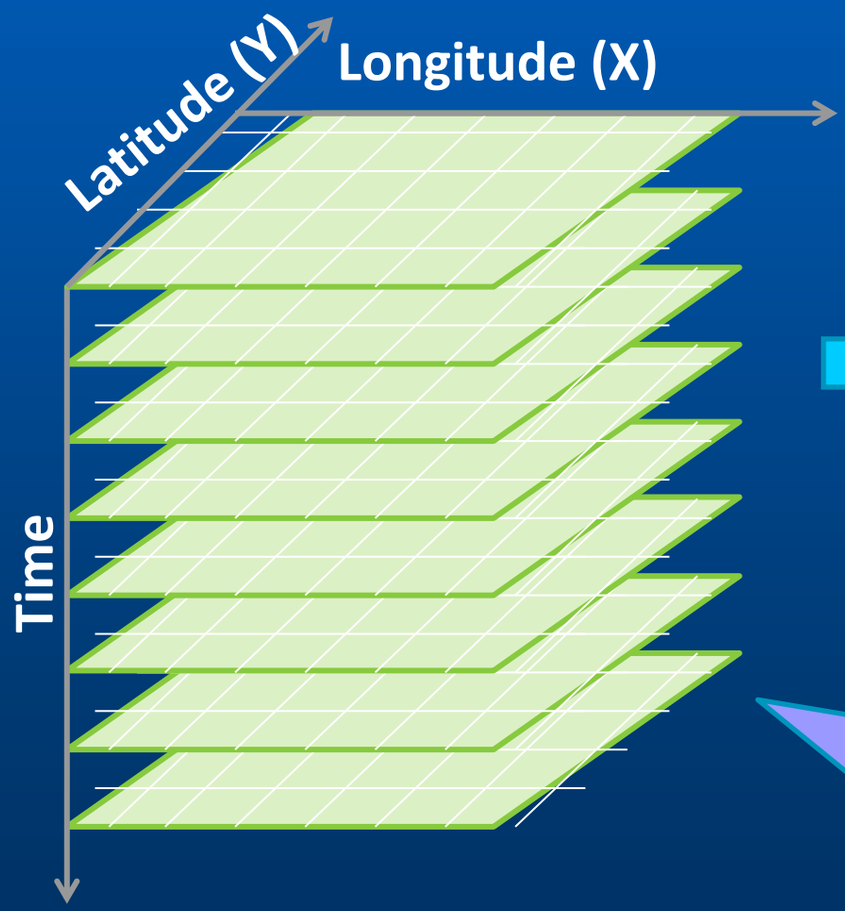


“Digital Divide” Problem

- Data archived in the form of all variables one time step per file
- Users often need long time series for single variables at single grid “points”
- Access is orthogonal to archive → Inefficient

ACCESS Project Solution for Bridging the Digital Divide

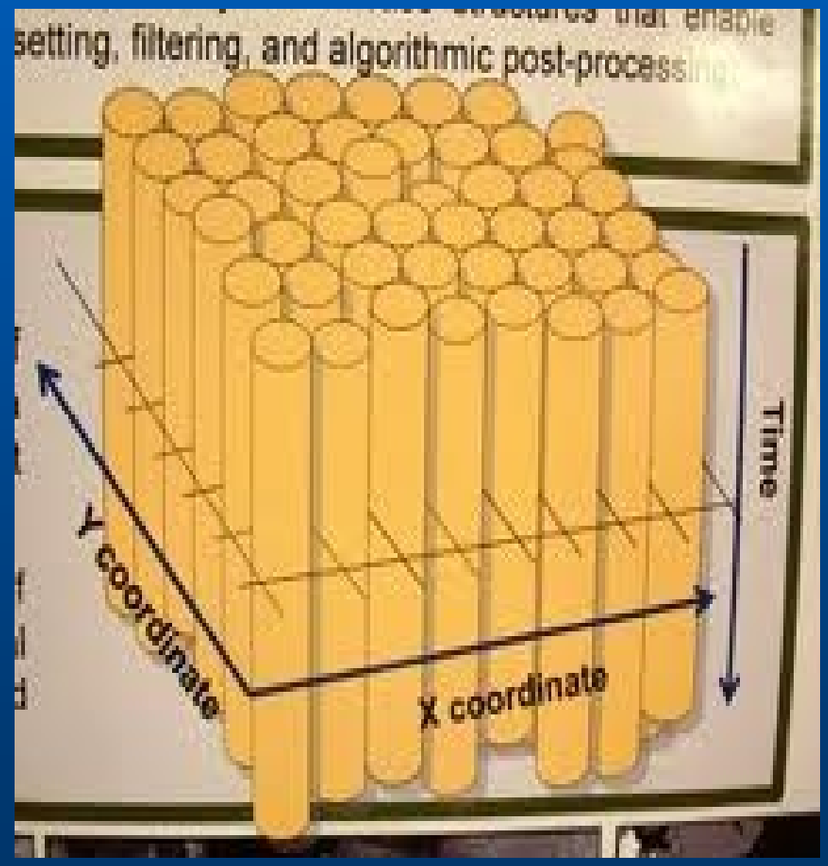
Original Data Archive



One variable
one grid point
all time steps
per file

All variables
all grid points
one time step
per file

Reorganized Data Archive



Early time series service of NLDAS Noah 0-100 cm soil moisture, e.g.,

http://hydro1.sci.gsfc.nasa.gov/daac-bin/access/timeseries.cgi?*variable*=NLDAS:NLDAS_NOAH0125_H.002:SOILM0-100cm&*startDate*=1979-01-02T00&*endDate*=2012-09-30T23&*location*=NLDAS:X217-Y042&type=plot

The Rain to Climate Connection: Exploring Earth's Water Cycle with the Global Precipitation Measurement (GPM) Mission

Dalia Kirschbaum

GPM Applications Scientist and Education and Outreach Coordinator

Dorian Janney

GPM Education Specialist

NASA Goddard Space Flight Center

February 27th, 2013

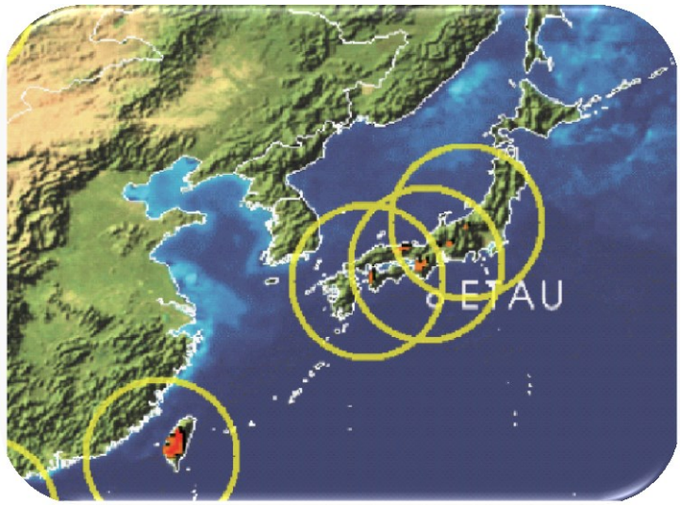
GPM Data Products

Product Level	Description	Coverage
Level 1B GMI, GMI-2 Level 1C GMI, GMI-2 *Latency ~ 1 hour*	Geolocated Brightness Temperature and intercalibrated brightness temperature	Swath, instrument field of view (IFOV)
Level 1B DPR	Geolocated, calibrated radar powers	Swath, IFOV (produced at JAXA)
Level 1C, partner radiometers	Intercalibrated brightness temperatures	Swath, IFOV
Level 2 GMI, GMI2 *Latency ~1 hour*	Radar enhanced (RE) precipitation retrievals	Swath, IFOV
Level 2 partner radiometers	RE precipitation retrievals from 1C	Swath, IFOV
Level 2 DPR *Latency ~3 hours*	Reflectivities, Sigma Zero, Characterization, DSD, Precipitation with vertical structure	Swath, IFOV (Ku, Ka, combined Ku/Ka)
Level 2 combined GMI/DPR *Latency ~3 hours*	Precipitation	Swath, IFOV (initially at DPR Ku swath and then at GMI swath)
Level 3 Latent Heating (GMI, DPR, Combined)	Latent Heating and associated related parameters	0.5 x 0.5 daily and monthly grid
Level 3 Instrument Accumulations	GMI, partner radiometers, combined and DPR	0.1 x 0.1 daily and monthly grid
Level 3 Merged Product	Merger of GMI, partner radiometer, and IR	0.1 x 0.1 hourly grid
Level 4 Products	Model assimilated data	Fine temporal and spatial scale TBD

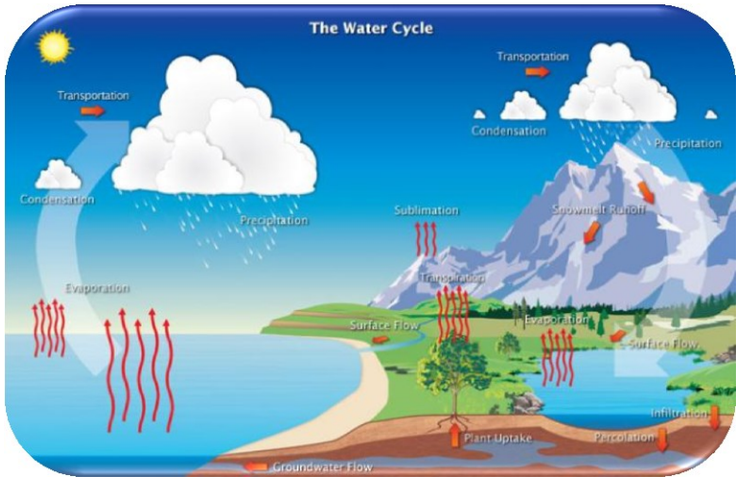
Applications Overview

Flooding

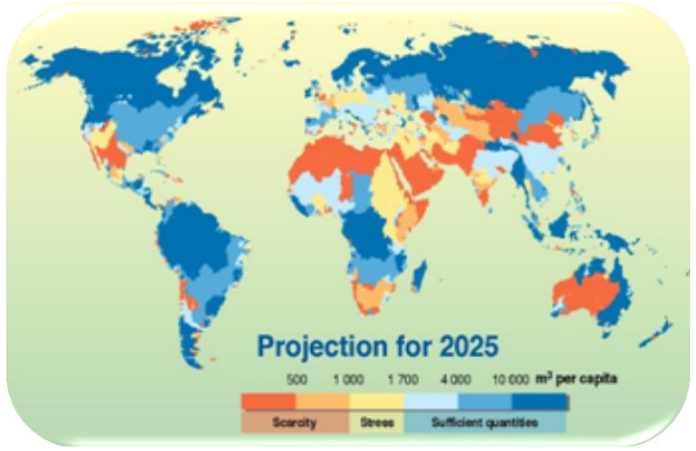
Landslides



Land surface and climate modeling

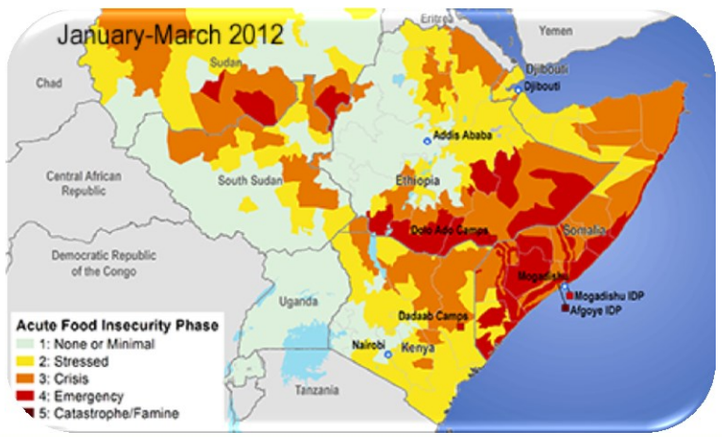


Freshwater Availability



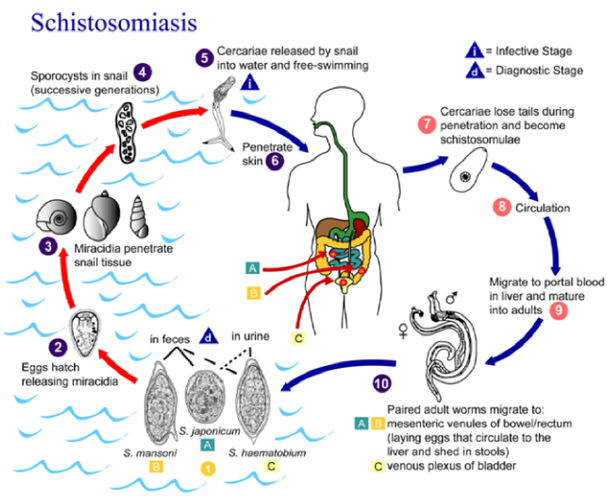
Extreme Events

Agriculture/Famine Early Warning



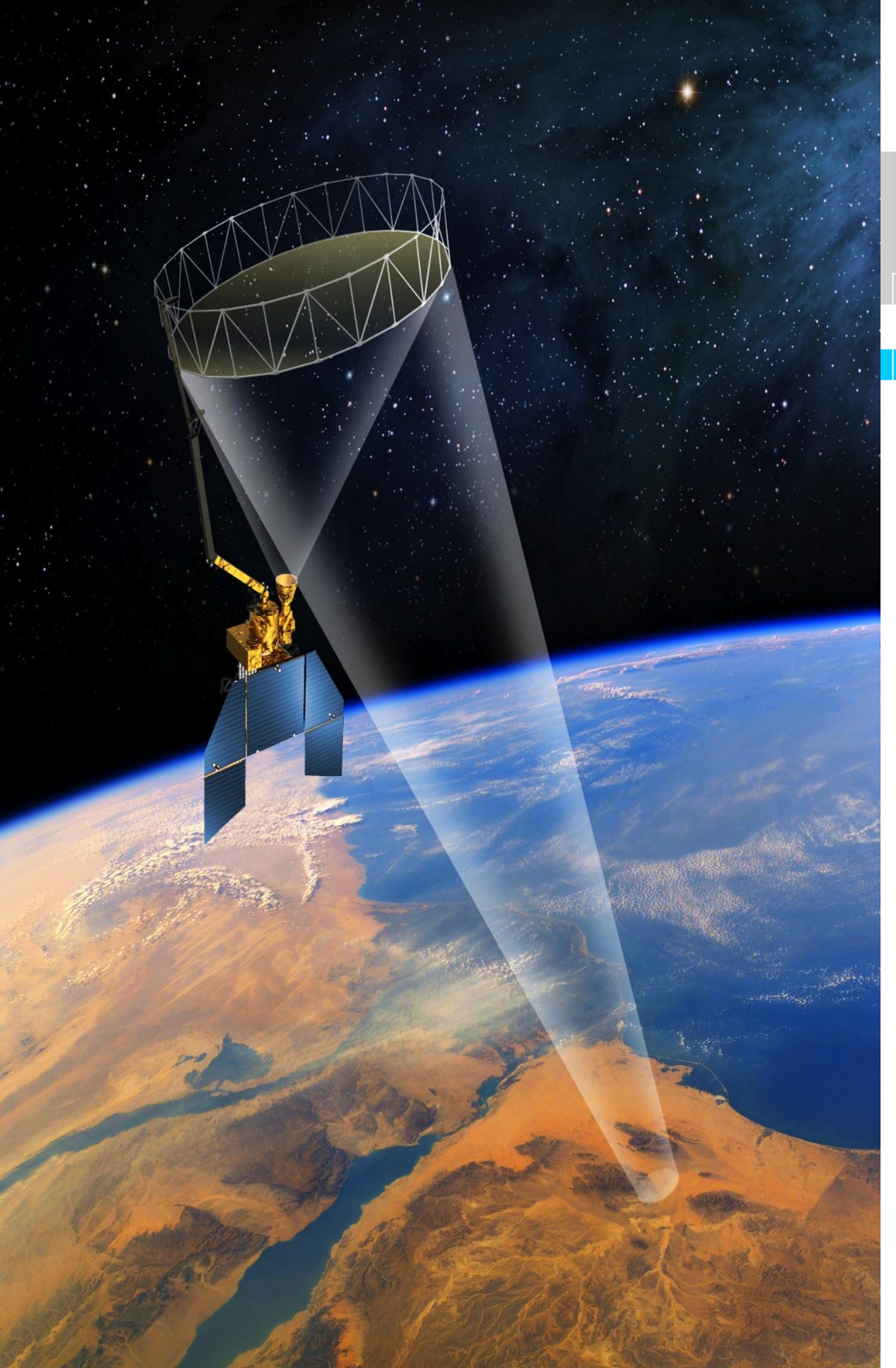
The rain and snow data gathered from the TRMM and GPM missions already provide and will extend our capabilities to study a wide range of applications for scientific research and societal benefit.

World Health



Data to end user connection

- GPM Applications Workshop
  - October 28-29th, 2013
  - NOAA Conference Center, College Park, MD
- Workshop objectives :
  1. Update the Earth science and applications communities on GPM
  2. Provide an overview of current data applications for TRMM and potential applications for GPM across elements of the Applied Sciences Program
  3. Provide an opportunity for community feedback to NASA on data products, data access and other user needs
- The intended audience for this workshop is Earth observation data users and end users in the research and applications communities across all sectors – government, commercial, non-government organizations, and academia.



SMAP Data Products

USGS SMAP Joint Mission Tutorial

Barry Weiss
Scott Dunbar

SMAP Science Algorithm Development
SMAP Science Data System (SDS)
Jet Propulsion Laboratory
California Institute of Technology

SMAP Applications

SMAP Applications of Surface Soil Moisture and Freeze/Thaw Measurements

- Discovery of Fundamental Links in the Earth System: Over land regions the water, energy and carbon cycles are interrelated through soil moisture and its freeze/thaw state.
- Improved Weather Forecasts: Initialization of the soil moisture state in Numerical Weather Prediction (NWP) models improves the predictability of weather events influenced by land-surface fluxes.
- Advanced Capability to Assess Land Productivity: Soil moisture is a primary factor in the growth of plants in both natural and agricultural ecosystems.
- New Era in Monitoring Flood Hazards: Surface soil moisture information enhances early warnings of costly flood and landslide hazards.
- Accurate Carbon Budgets: Forests in northern latitudes take up carbon dioxide from the atmosphere during their growing season (thawed state). Carbon dioxide is released during the rest of the year. Knowledge of the timing of freeze and thaw conditions enables calculation of the contribution of forests to climate change.

Proposed SMAP Data Products

Data Product Short Name	Description	Grid Resolution	Granule Extent
L1A_Radar	Parsed Radar Instrument Telemetry		Half Orbit
L1A_Radiometer	Parsed Radiometer Instrument Telemetry		Half Orbit
L1B_S0_LoRes	Low Resolution Radar σ_o in Time Order	5x30 km (10 slices)	Half Orbit
L1C_S0_HiRes	High Resolution Radar σ_o on Swath Grid	1 km	Half Orbit
L1B_TB	Radiometer T_B in Time Order	39x47 km	Half Orbit
L1C_TB	Radiometer T_B	36 km	Half Orbit
L2_SM_A	Radar Soil Moisture (includes Freeze-Thaw)	3 km	Half Orbit
L2_SM_P	Radiometer Soil Moisture	36 km	Half Orbit
L2_SM_AP	Active-Passive Soil Moisture	9 km	Half Orbit
L3_FT_A	Daily Global Composite Freeze/Thaw State	3 km	North of 45° N
L3_SM_A	Daily Global Composite Radar Soil Moisture	3 km	Global
L3_SM_P	Daily Global Composite Radiometer Soil Moisture	36 km	Global
L3_SM_AP	Daily Global Composite Active-Passive Soil Moisture	9 km	Global
L4_SM	Surface & Root Zone Soil Moisture	9 km	Global
L4_C	Carbon Net Ecosystem Exchange	9 km	North of 45° N

SMAP Data Product Availability

Data Product Short Name	Description	Initial Availability After Commissioning	Latency to User Community after Acquisition
L1A_Radar	Parsed Radar Instrument Telemetry	3 months	12 hours
L1A_Radiometer	Parsed Radiometer Instrument Telemetry	3 months	12 hours
L1B_S0_LoRes	Low Resolution Radar σ_o in Time Order	3 months	12 hours
L1C_S0_HiRes	High Resolution Radar σ_o on Swath Grid	3 months	12 hours
L1B_TB	Radiometer T_B in Time Order	3 months	12 hours
L1C_TB	Radiometer T_B	3 months	12 hours
L2_SM_A	Radar Soil Moisture	3 months	24 hours
L2_SM_P	Radiometer Soil Moisture	3 months	24 hours
L2_SM_AP	Active-Passive Soil Moisture	3 months	24 hours
L3_FT_A	Daily Global Composite Freeze/Thaw State	6 months	50 hours
L3_SM_A	Daily Global Composite Radar Soil Moisture	6 months	50 hours
L3_SM_P	Daily Global Composite Radiometer Soil Moisture	6 months	50 hours
L3_SM_AP	Daily Global Composite Active-Passive Soil Moisture	6 months	50 hours
L4_SM	Surface & Root Zone Soil Moisture	6 months	7 days
L4_C	Carbon Net Ecosystem Exchange	6 months	14 days